ABSTRACT

A method and apparatus for the automatic creation of novel designs, specifically electronic circuits, controllers, antennas, and mechanical systems to satisfy prespecified design goals, using search procedures, such as genetic programming, genetic algorithms, simulated annealing and hill climbing is described. Further, the techniques include automatically creates designs which do not posses key characteristics of preexisting technology. The present invention uses a population of entities which may be evolved to generate structures that may potentially satisfy the design goals. The behavior of the structures is evaluated in view of the design goals, and the structures are compared to a preexisting structure. Those structures more closely meeting the design goals and not similar to the preexisting structure are favored further until a structure is generated that either meets the prespecified design goal or some other process completion criteria. In this manner, a novel structure may be obtained.